

REGION VIII, MONTANA OFFICE FEDERAL BUILDING, 301 S. PARK, DRAWER 10096 HELENA, MONTANA 59626-0096



INSPECTION REPORT

FACILITY:

ASARCO East Helena Plant

P.O. Box 1230, E. Helena, MT 59635

EPA ID # MTD 006 230 346 Telephone (406) 227-7191

RESPONSIBLE OFFICIAL:

Jon Nickel, Environmental Supervisor John Cavanaugh, Senior Environmental

Engineer

INSPECTION PARTICIPANTS: Susan Zazzali, EPA; Ed Moriarty, and Ed

Ganter, SAIC

DATE OF INSPECTION:

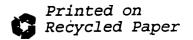
July 1 & 2, 1996

<u>PURPOSE OF INSPECTION</u>: To sample secondary materials processed by Asarco. Materials sampled were spent metal bearing brick, flux substitutes, partially loaded carbon, and excavated soils. The samples will be analyzed for total metals, TCLP metals and total silica.

FACILITY DESCRIPTION: ASARCO is a primary lead smelter occupying approximately 80 acres in East Helena, Montana. The smelter has been in operation since the late 1800s. The smelter produces primary lead bullion and copper matte and speiss which are further refined at other ASARCO facilities. Source materials for the smelter include virgin ores (60-70% from South America) as well as non-virgin (secondary) metal-bearing materials. The facility also operates an acid plant which produces 93% food grade sulfuric acid.

RESULTS OF INSPECTION: The inspection team arrived at the ASARCO facility at approximately 9:00 AM and met with Jon Nickel to discuss the purpose of our visit. Our expressed purpose was to sample secondary materials processed by Asarco. The materials will be analyzed to assist in waste characterization. The day was clear and calm with the temperature in the low nineties Fahrenheit by midday.

I showed Mr. Nickel the list of materials we wanted to sample (attached). Mr. Nickel made a copy of the list. I told him that the list was based on information submitted by Asarco and was only updated through September 1995. I told him if there were materials brought on site since that date that were spent brick, partially charged carbon, or flux substitutes, that we would like



to sample those materials also. I also told him we would like to sample the excavated soils that he had recently discussed with the Superfund program. I asked Mr. Nickel if Asarco would like to split samples with us. He stated that they would. I told Mr. Nickel that we would provide him with copies of the analysis results and photographs. Mr. Nickel left to call the appropriate people, and the sampling team went to prepare the sampling equipment.

In the parking lot, Mr. Moriarty washed all the scoops in a cooler. The scoops were then rinsed in a dilute nitric acid solution and then rinsed in deionized water. The scoops were air dried and wrapped in aluminum foil. A field blank and equipment blank were then made. At 10:30 the sampling team left with Mr. Nickel for the outdoor storage yard on the south side of the Ore Storage and Handling Building.

Mr. Jim Shaw, Ore Storage Sampling Manager, and Mr. John Cavanaugh, Senior Environmental Engineer, met us in the outdoor storage yard. Mr. Shaw showed us to the individual storage piles. Mr. Cavanaugh took notes and photographed the sampling. The sampling was done in accordance with the SOP (attached). Asarco requested that the split samples be placed in brown paper bags which they provided. The following samples were taken, starting at approximately 10:50 AM:

1.	Amarillo Brick	pile #183	photo #1
2.	Excel Optical	pile #1106	photo #2
3.	Kendall Carbon	pile #299	photo #3
4.	Zortman Carbon	pile #278	photo #4
5.	Metals Research Carbon	pile #735	photo #5
6.	Metals Research Carbon	duplicate of sa	ample #5

- 7. Omaha Refractory pile #182 photo #6
 (This material was still in brick form. It was broken up with a rock hammer so that pieces of it could be placed in the sample jar.)
- 8. East Helena Brick #1 photo #7
 (Processed for precious metal recovery. In-house materials are not assigned a pile number.)
- 9. Excavated Soil #1 photo #8
- 10. Excavated Soil #2 photo #9

- 11. East Helena Brick #2 photo #10 (Processed for lead and flux. Rock hammer used to break up bricks.)
- 12. Golden Photon Flux pile #? photo #11 and #12 (Rock hammer used to break up glass sheets.)
- 13. El Paso Brick

photo #13

The El Paso brick was stored in railroad cars. I asked why the brick was in the cars. Mr. Shaw stated that they were going to dispose of the brick. I asked if they were planning to dispose of it at Laidlaw's Utah facility. He stated yes. Mr. Nickel told me that they had graded the El Paso brick (separated out smaller diameter material) and smelted the fines. Mr. Nickel stated that most of the precious metals were located in the fines. Mr. Nickel stated that the East Helena brick would also be sent off-site for disposal. He did not say when.

The excavated soils were in several piles totaling approximately 200 feet long, ten feet high and twenty feet wide at the base. The composition of the piles was diverse. Some piles contained soil and bricks, others had large chucks of concrete mixed in the soil, and some were mostly comprised of soil. The two samples we took were not adequate to characterize all the excavated soils.

The only remaining items to be sampled were the Encycle flux substitutes. Mr. Shaw indicated that there were approximately 15 piles of Encycle materials on the facility. I told him I would need to see the analysis sheets to determine which piles we would like to sample. I suggested that they could gather this information that afternoon and we would return the following morning to sample. Mr. Nickel agreed to meet us at 10:00 AM Tuesday morning.

Mr. Nickel asked which analyses we would be running. Mr. Moriarty informed him that we would run EPA Methods 1311 (TCLP-metals), 6010 (total metals), 7471 (mercury) and 7470 (for the water field and equipment blanks). I asked where Asarco planned to have there samples analyzed. Mr. Nickel stated that Asarco's Technical Services in Salt Lake City would do the analyses.

We departed the facility at approximately 1:00 PM.

Tuesday morning Mr. Nickel left a message that he was ready to meet with us as early as 9:00 AM. We arrived at the facility at approximately 9:35 AM. At the premeeting, Mr. Nickel asked again the purpose of our sampling. I again explained that EPA was attempting to determine the appropriate characterizations of these materials, and that a TCLP test was needed prior to reaching a decision. Mr. Nickel asked if we were planning to take an enforcement action. I answered, "Possibly."

Mr. Nickel presented us with a table of the Encycle materials on site that day. The table had some analytical results. According to the table, there were 14 distinct piles of materials, but only 5 different types of materials. I told Mr. Nickel that we would sample the materials which contained less than 40% silica. Mr. Nickel stated that the materials on the list with less than 40% silica were not used as flux substitutes. I told him we still wanted to sample them. The following materials were on the list:

1. Used circuit boards pile #289 no photo
(The circuit boards were not sampled because they are exempt from regulation as a solid waste. We did not discover this was circuit boards until the containers were opened.)

2.	Encycle material	Bin #13	photo #14
3.	Pb/Cu Sulfide	pile #697	photo #15
4.	Treated East Helena Baghouse Dust #1	pile #520	photo #16
5.	Treated East Helena Baghouse Dust #2	pile #464	photo #17

July 5, 1996
Date of Inspection Report

Susan A. Zazzali EPA Inspector

cc: Suzanne Bohan, 8ENF-L



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION VIII, MONTANA OFFICE FEDERAL BUILDING, 301 S. PARK, DRAWER 10096 HELENA, MONTANA 59626-0096

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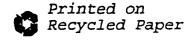
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July 5, 1996
Date of Inspection Report

Susan A. Zazzali EPA Inspector

cc: Suzanne Bohan, 8ENF-L

70390313737

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Citat:

Science Application International Corp.

Project

Sample Matrix: Solid

AEE1/01-0804-07-4612-062

Service Request: K9603970 Date Collected: 7/1-2/96 Date Received: 7/3/96 Date Extracted: 7/15/96

Total Motals Units: mg/Kg (ppm) Dry Weight Basis

		Sample Name: Lab Code; Date Analyzed:	Bin 13 K9603970-003 7/17/96	Pile 697 K96 03970-004 7/17/96	PHz 796 X9603970-005 7/1 7/ 96
Amilyte	EPA Method	MRL			
Alumimm	6010A	10	3850	2180	2180
Antimony	6010A	10	339	571	565
Agenic	A010A	50	1260	2380	2420
Barlum	6010A	1	170	150	109
Berythium	6010 A	1	2	ИD	ND
Boron	6010A	10	159	345	316
Caclanton	6010A	1	1890	3720	3430
Calphun	. 6010A	10	14000	21300	15400
Chrombon	6010A	2	. 332	950	1060
Colult	6010A	2	268	3850	3470
Copper	6010A	2	21400	130000	116000
Imel	6010A	4	13700	<i>5</i> 2200	48300
Lead	6010A	20	205000	199000	161000
Magnesium	6010A	2	1500	· 31B0	2 45 0
Manganesc	6010A	1	290	418	379
Matomy	7471	0.2	302	22.5	15.7
Molybdenum	6010 A	2	173	30	37
Nickel	6010A	10	1560	16200	13100
Potsesium	6010A	400	1250	ND	440
Selvetom	6010A	50	<200(B)	51	ND
Silione, as SiO ₂ (X)	6010A	20	2530	6180	5210
Silver .	6010A	2	264	75	90
Sodimm	6010A	20	15800	30100	29800
Varuadimm	6010A	2	12	41	31
Zinc	601 0A	2	55700	40500	43600

В

The MRL is elevated because of matrix interferences.

X

FICE actions SEO2.

Date: 7/18/96 Approved By:

7039031373

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

CHust:

Science Application International Corp.

Project:

AEH/01-0834-07-4612-062

Sample Matrix: Solid

Bervice Request: K9603970

Date Collected: 7/1-2/96 Date Received: 7/3/96

Date Extracted: 7/15/96

Total Metals Units: mg/Kg (ppm) Day Weight Bach

		Sample Namo:	PILE 520	Pile 464	Amarillo Brick K9603970-010
	•	Lab Code;	K9603970-006	K9603970-007	7/17/96
		Date Analyzed:	7/17/ 9 6	7/17/ 96	//1//90
,	epa				
Analyta	Method	MRL			
Almaima	6010A	10.	563	612	9410
Antimony	6010A	10	1950	1960	4350
	6010A	50	15100	15400	1150
Barina	6010A	1	61	32	2340
Ber/lim	6010A	I	ND	ND	ND
Bonan	6010A	10	43	80	3220
Cadmium	6010A	1	42 100	104000	65
Calcium	6010A	10	10200	13000	13200
Chromium	6010A	2	174	178	603
Cobalt	6010A	2	9	<3(B)	24
Cupper	6010A	2	18000	6520	5900 0
Iron.	A010A	4	5640	5810	5180
Leai	6010A	20	197000	162000	14200
Magnetium	6010A	2	403	514	41200
Marganess	6010A	1	132	246	92
Mercury	7471	0.2 ·	23.2	10.5	2.8
Molybdanum	6010A	2	109	52	4
NEdal	601QA	10	146	145	931
Potragium	6010A	400	6140	795 0	ND
Selenium	601QA	50	1640	1260	54100
ETTINOS, SE SHO! (XC)	6010A	20	1250	1230	2920
SOVE	6010A	2	282	230	318
Sodhum	6010A	20 .	4380	5480	16200
Vanadhun	6010A	2	1	4	113
Zin :	6010A	2	728 00	183000	2490

B

The MRL is alwayed because of matrix interferences.

X

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Approved By:		Date:
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Analytical Report

Client

Science Application International Corp.

Project:

ARH/01-0834-07-4612-062

Sample Matrix: Solid

Service Request: K9603970

Date Collected: 7/1-2/96 Date Received: 7/3/96 Date Extracted: 7/15/96

Total Motels Units: mg/Kg (ppm) Dry Weight Banks

		Sample Name: Lab Code: Date Analyzed:	X-Cell Optic Flux K%03970-011 7/17/96	CR Kendell K9603970-012 7/17/96	Zortman Carbon K9603970-013 7/17/96
		Date remyzes.	11.11.70	111170	7721730
Analyte	EPA Method	MRL			
Alumianm	6010A	10	13700	39	239
Antirpony	6010A	10	32	ND	ND
Armnic	6010A	50	97	ИD	ND
Barium	60 10 A	1	12700	9	45
Beryllium	6010A	1	ND	ND	ND
Bormi	6010A	10	7860	12	ND
Cadnium	6010A	1	13	18	7
Calcium	6010A	10	12000	28600	18100
Chronium	6010A	2	11	ND	12
Cobait	6010A	2	40 .	2	4
Сорры	6 010 A	2	266	74	219
Iron	6010A	4	16600	530	3000
Load	6010A	20	46800 4°/		20
Magnesium	6010A	2	3590	242	908
Manganess	6010A	1	386	42	354
Mercury	7471	0.2	ND	35.8	12.9
Molytidenum	6010A	2	ND	ND	ND
Nickel	60 10 A	10	23	125	985
Potagojum	6010A	40 0	75 30	ND	ND
Salonizma	6010A	50	ND	סמ	1130
Silicon, as SiO ₂ (X)	6010A	20	739	211	595
Silver	6010A	2	121	7	275
Sodbur	ADIUA	20	\$ 410	<i>6</i> 700	1170
Venettun	6010A	2	11	ND	6
Zinc	6010A	2	3120	1060	195

x

HCI soluble SiO2

Approved By:

July No.

SENT BY:SAIC MCLEAN T1-13-10 ; 7-22-96 ; 10:44AM ;

TUSBUSISIO .

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:

Science Application International Corp.

Project:

Sample Matrix: Solid

AEH/01-0834-07-4612-062

Service Request: K9603970 Date Collected: 7/1-2/96

Date Received: 7/3/96 Date Extracted: 7/15/96

Total Metals Units: mg/Kg (ppm) Dry Weight Basis

		Sample Name: Lab Code: Date Analyzzo:	Metals Research Carbon 1127 K9503970-014 7/17/96	Refactory Brick K9603970-015 7/17/96	Helms. Brick (PM) K9603970-016 7/17/96
Analyte	EPA Method	MRL			
Aluminum	. 6010A	10	1780	3120	3470
Antimony	6010A	10	ND	13500	5950
Arreric	601 0A	50	57	14600	12200
Bartum	6010 A	1	140	11	102
Beryllinm	6010A	1	ND	ND	ND
Boron	601QA	10	176	91	88
Cadminm	. 601 0A	1	9	189	7360
Calcium	6010A	10	20100	12000	133000
Chranium	6010A	2	13	98	670
Cobalt	6010A	2 .	2	87	51
Copper	6010A	2	14	89800	51000
lum -	6010A	4	3330	7930	24100
Lead	6010A	20	23	82300	728 00
Magiethm	6010A	2	1600	4150	35600
Manganese	6010A	1	93	41	445
Morcury	7471	0.2	995	2.1	50.9
Molybdaman	6010A	2	ND	2	16
Nickel	6010A	10	281	1150	422
Potsuzium	601UA	400	ND	ND	177
Soletium	6010A	50	29	492	454
Silican, M SiO, (X)	6010A	20	609	659	1130
Silver	6010A	2	75	263	259
Sodium	6010A	20	12800	42000	17400
Vereidtum	6010A	2	6	6	29
Zinc .	601UA	2	437	5590	18000

X

HCI soluble SiO₂.

Approved By:

SENT BY: SAIC MCLEAN T1-13-10 ; 7-22-96 ;10:44AM ;

COLUMBIA ANALYTICAL SERVICES, INC.

1032021212

Analytical Report

Client:

Science Application Imagesticant Corp.

Project:

AEH/01-0834-07-4612-062

Sample Matrix: Solid

Service Request: K9603970 Date Collected: 7/1-2/96

Date Received: 7/3/96

Date Extracted: 7/15/96

Total Morals Units: mg/Kg (ppm) Dry Weight Basis

·		Sample Name: Lab Cude; Date Analyzed:	EX-Ball-1 K9603970-017 7/17/96	EX Soil-2 K9603970-018 7/17/96	Eust Helena Brick-2 K9603970-019 7/17/96
	EPA	Bros			
Analyte	Method	MRI.			
Almoinum	6010A	10	6870	8090	8520
Antimony	6010A	10	253	298	9470
Amenic	6010A	50	3720	2050	13200
Bertum	6010A	i	180	242	145
Beyllium	6010A	1	ND	ND	ND
Borus	6010A	. 10	21	22	38
Cadmium	6010A	t	40 30	10800	1320
Calcium	60 10A	10	57200	46400	49100
Chriminn	6010A	2	16	19 .	47
Cobalt	6010A	2	121	17	56
Copper	601QA	2	476 0	2820	70200
Iron	A0109	4	24300	22000	31100
Lexi .	6010A	20	30500	44600	84800
Magnoshun.	6010A	2	13900	5700	5100
Manganose	6 010 A .	1	1290	1100	490
Meetury	7471	0.2	33.1	115	105 0
Motybdemm	6010A	2	8	22	8
Nicipl	60 10 A	10	137	29	1040
Pottssium	60 10 A	400	1750	3610	1460
Selectium.	601QA	50	6R	176	429
Silicon, as SiO ₂ (X)	6010A	20	1980	3210	1450
Situat	GULQA	2	136	274	302
Sodium	6010A	20	1180	1430	3810
Vanadinm	6010A	2	23	32	16
Zinc	6010A	2	19500	20300	597 0

X

HCI soluble SIQ.

DESCRIPTION OF STREET

2-12:

SENT BY: SAIC MCLEAN T1-13-10 ; 7-22-96 ;10:45AM ;

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client

Science Application International Corp.

Project:

ABH/01-0834-07-4612-062

Sample Matrix: Solid

Service Request: K9603970

7038031313

Date Collected: 7/1-2/96

Date Received: 7/3/96 Date Extracted: 7/15/96

Total Metals Units: mg/Kg (ppm) Dry Weight Boots

		Sample Name: Lab Code: Date Analyzed:	Galden Photon K9603970-020 7/17/96	Ei Pasco Brick K9603970-021 7/17/96	Metals Research Carbon 1132 K9603970-022 7/17/96
Amalina	LIPA Method	MRL			
Analyte					
Aluminum	60I0A	10	מא	5230	2730
Antimony	6010A	10	ND	815	20
Asserdo	6010A	50	ND	2050	128
Barium	6010A	1	1	270	242
Beryllium	6010A	1	ХD	ND	ND
. Bocots	6010A	10	ND	97	136
Cadminim	60 10 A	1	2040 -	2630	116
Calcium	6010A	10	265	26200	29200
Chronium	6010A	2	23	64	17
Cobalt	6010A	2	סא	36	ND
Сорры	6010A	2	7	3340	85
Ioon.	6010A	4	419	31000	5070
Lend	6010A	20	ND	46100	387
Magrasinm	6010A	2	93	3080	2110
Manganese	6010A	1	1	1660	68
Morcary	7471	0.2	ND	203	1290
Molybdemun	6010A	2 .	ND	20	ND
Nickii	6010A	10	ND	82	131
Potensium,	6010A	400	ND	1350	ND
Selection	6010A	5 0	ND	460	50
Silicen, as SiO2 (X)	6010A	20	263	2040	1060
SCI ve:	A010A	2	ND	185	131
Sodium.	6010A	20	1130	1070	12600
Vanadium	6010A	2	ND	31	6
Zinc	6010A	2	3	13300	636

X

HCi voluble SiO2.

Analytical Report

Science Application International Corp.

Project:

Sample Matrix: Solid

AUH/01-0834-07-4612-062

Service Request: K9603970 Date Collected: NA Date Received: NA Date Extracted: 7/15/96

Total Metals Units: mg/Kg (ppm) Dry Weight Basis

		Sample Name: Lab Code: Dan: Analyzed:	Method Blank K9603970-MB 7/17/96
	EPA		
Analyte	Method	MRL	
Alminum	. 6010A	10	ND
Anthumy	6010A	10	, ND
Amenic	6010A	50	ND
Barium	6U10A	1	ND
Bery lium	60 10A	I	ND
Borga	6010A	.10	ND
Cadastom	6010A	1	ND .
Calcium	6010A	10	ND
Chronium	A010A	2	ND
Cobalt	6010A	2	ND
Copper	6010A	2	ND
Imn	6010 A	4	ND
Lead	6010A	20	ND
Magnesture	601 0A	2	ND
Manganese	6010A	1	ND
Mercucy	7471	0.2	ND
Molybdomum .	6010A	2	ND
Nickal	6010A	10	ND
Potarainm.	6010A	400	ND
Solering	6010Å	50	ND
Silicum, au SiO ₂ (X)	6010A	20	ND
Silver	6010A	2 .	ND
Sodium	6010A	20	· ND
Variation	6010A	2	ND
Zinc	6010A	2	ND

X

HC1 soluble SIO2.

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Analytical Report

Chent:

Science Applications International Corp.

Project:

ARH/01-0834-07-4612-062

Sample Matrix: Water

Service Request: K9603970 Date Collected: 7/1-2/96

Date Received: 7/3/96

Date Extracted: 7/15/96

Total Metais Units: µg/L (ppb)

·	·	Sample Name: Lub Code: Date Analyzed:	EB-2 K9603970-001 7/17/96	FB-3 K9603970-002 7/17/96	ER-1 K9603970-008 7/17/96
Azalyte	EPA Method	MRL	•		
-				.=	
Alum mun	6010A	50	ND	ND	ND
Anthrony	6010A	50	ND	ND	ND
Amenic	6010A	100	מא	שא	ND
Berlun	6010A	5	· ND	ND	ND
Heryithm	60 10A	5	ND	ND	ND
Buran	6010A	50	ND	ND	ND
Cadminm	6010A	4	XD	מא	ND
Calcium	6010A	50	93	93	88
Chronium	6010A	5	ND	MD	ND
Cobeli;	6010A	10	ИD	ND	אַס
Copper	6010A	10	ND	ND	ND
Iron	6010A	20	ИĎ	ND	ND
Lond	6010A	50	ND	ND	ND
Magnesium	A 010 A	10	17.	14	16
Manganess	601DA	5 '	ND	ND	ND
Mercury	7470	0,5	ND	ND	ND
Molybienum	6010A	10	ИD	ND	. ND
Nickel	60 10 A	20	ND	ND	ND
Potassium.	6010A	200 0	ND	ND	ND
Selection	60 10A	100	ND	ИD	ND
Silicon, as SiO ₂ (X)	6010A	200	253	254	217
Silver	6010 A	10	KD	ND	ND
Sedium:	6010A	100	410	380	430
Venedium	6010A	10	ND	ND	מא
Zinc .	6010A	10	ND	ND	ND

X

HCl soluble SiO2

Approved By:

Page No.:

Analytical Report

Client:

Science Applications International Corp.

Project:

AEH/01-0834-07-4612-062

Sample Matrix: Water

Sarvice Request: K9603970 Date Collected: 7/1-2/96

Date Received: 7/3/96
Date Extracted: 7/15/96

Total Metals Units: µg/L (ppb)

Analyte	EPA Method	Sample Name: Lab Code: Deta Analyzed: MRL	FB-1 K9603970-009 7/17/96	Mathod Blank K9603970-MB 7/17/96
Alumiuum	V010V	50	ND	ND
Antimumy	A010A	50	ND	ND
Arrento	6010A	100	ND	ND
Barium	6010A	5	ND	ND
Boryilium	6010A	5	ND	ND
Baran	6010A	50	ND	מא
Cadmium	6010A	4	ND	ND
Calcium	6010A	50	90	ND .
Chromium	6010A	5	ND	ND
Cobalt	6010A	10	ND	ND
Copper:	6010A	10	ND	ND
Iron	6010A	20	ND	ND
Lead	6010 A	50	ND	ND
Magnesium	6010A	10	14	מא
Manganese	6010A.	5	ND	. ND
Marcury	7470	0.5	ND	ND
Molybilemmu	6010A	· 10	ND	ND
Nickel	6010A	20	ND	ND
Potessium.	6010A	2000	ND	ND
Selentum	6010A	100	ND	ND
Silicon, as SiO ₂ (X)	6010A	200	ND	, מא
Silvor	6010A	10	ND	ND
Sodturn	6010A	100	390	ND
Vanadium	6010A	10	ND	ND
Zinc	6010A	10	ND	ND

X

HCl suluble SiO2

MIGHA COM

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Analytical Report

Client

Science Application International Corp.

Project:

Analyte

Amenic

Herium

Lead

Silver:

Merchy

Beleninm

Cadmium

Chromium

AEH/01-0834-07-4612-062

EPA

Method

3010A/6010A

A010A/6010A

3010A/6010A

3010A/6010A

3010A/6010A

7470

3010A/6010A

3010A/6010A

0.1

0.5

0.01

0.01

0.05

0.1

0.01

Sample Matrix: Solid

Service Request: K9603970

Date Collected: 7/1,2/96 Date Received: 7/3/96

Date TCLP Performed: 7/15/96

Date Extracted: 7/16/96

Toxicity Characteristic Leaching Procedure (TCLP)

HPA Method 1311

Metals

Units: mg/L (ppm) in TCLP Extract

PDs 796 Sample Name: Ph 13 Pile 697 K9603970-005 Lab Code: K9603970-003 K9603970-004 7/17/96 Date Analyzed: 7/17/96 7/17/96 Regulatory Limit MRL ND ND 5 ND ND ND 100 ND 31.9 57.9 48.8 1 ND ND M 5 69.5 71.6 5 79.5 0.065 0.042 0.001 0,2 0.802 ND ND ND 1 ND 5 ND ND

From 40 CFR Part 261, et al., and Federal Register, March 29, 1990 and June 29, 1990.

Approved By:	iAnt	Date:	7/19/51
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Analytical Report

Client:

Science Application International Corp.

Project

AEH/01-0834-07-4612-062

Sample Matrix: Solid

Service Request: K9603970 Date Collected: 7/1,2/96

Date Received: 7/3/96

Data TCLP Performed: 7/15/96

Date Extracted: 7/16/96

Toxicity Characteristic Leaching Procedure (TCLP)

EPA Method 1311

Metals

Units: mg/L (ppm) in TCLP Extract

			Sample Name: Lab Code: Date Analyzed:	EK Scil-1 K9603970-017 7/17/96	EX Scil-2 K9603970-018 7/17/96	East Helena Brick-2 K9603970-019 7/17/96
Analyte	EPA Method	MRL	Regulatory Limit*			
Amenic	3010A/6010A	0,1	\$	Q. <i>5</i>	0.2	2.3
Barlum	3010A/6010A	0.5	100	ND	ND	ND
Cadmium	3010A/6U10A	0,01	1	40.4	243	18.4
Chromium	3010A/6010A	0.01	5	ND	10.0	ND
Lead	3010A/6010A	0,05	5	67.3	B1.7	46.4
Mercury	7470	0.001	0.2	0.001	0.665	0.003
Selenium	3010A/6010A	0.1	1	עא	0.8	מא
Silver	3010A/6010A	0.01	5	ND	ND	ND

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Science Application International Corp.

Project:

ABH/01-0834-07-4612-062

Sample Matrix: Solid

Service Request: K9603970

Date Collected: 7/1,2/96

Date Received: 7/3/96

Date TCLP Performed: 7/15/96 Date Extracted: 7/16/96

Texticity Characteristic Leaching Procedure (TCLP)

EPA Method 1311

Metals

Units: mg/L (ppm) in TCLP Extract

			Sample Numa: Lab Code: . Date Analyzed:	Golden Photon K9603970-020 7/17/96	El Paso Brick K9603970-021 7/17/96	Metals Research Carbon 1132 K9603970-022 7/17/96
Analyte	EPA Method	MRL	Regulatory Limit*			
Arsonic	3010A/6010A	0.1	5	ND	0.2	1.6
Bartum	3010A/6010A	0.5	100	ND	ND	1.4
Cadmiun	3010A/6010A	0.01	1	3.00	49.0	0.34
Chromium	3010A/6010A	0.01	5	ND	ND	ND
Load	3010A/6010A	0.05	5	0.35	201	0.36
Mercury	7470	0.001	0.2	סא	ND	2.34
Seleniura	ADIONADIOE	0.1	1	ND	0.3	0.2
Silver	3010A/6010A	0.01	5	ND	ND	ND

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Analytical Report

Client

Science Application International Corp.

Project:

AEE/01-0834-07-4612-062

Sample Watrix: Solid

Date Cullected: NA

Service Request: K9603970

Date Received: NA

Date TCLP Performed: 7/15/96

Date Extracted: 7/16/96

Toxicity Characteristic Leaching Procedure (TCLP)

EPA Method 1311

Metals

Units: mg/L (ppm) in TCLP Estract

	·.		Sample Name: Lab Code: Date Analyzed:	Method Blank K9603970-ME 7/17/96	
Analyte	EPA Method	MRL	Regulatory Limit*	•	
Armento	3010A/G010A	0,1	5	ND	
Barlum	A010A/6010A	ک.0	100	ND	
Cadminun	3010A/6010A	0.01	1	ND	
Chromium	3010A/6010A	0.01	5	ND	
Lend	3010A/6010A	0.05	5	ND	
Mercury	747 0	0.001	0.2	ND	
Scientura	3010A/6010A	0.1	1	ND	
Citrum Citrum	3010A/6010A	0.01	Ś	ND	

From 40 CFR Part 261, et al., and Federal Register, March 29, 1990 and June 29, 1990.

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Approvid By:		LAN	Date:	7/19/96
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Analytical Report

Client:

Science Application International Corp.

Project:

AEH/01-0834-07-4612-062

Sample Matrix: Solid

Service Request: K9603970 Date Collected: 7/1,2/96

Date Received: 7/3/96 Date TCLP Performed: 7/15/96

Date Extracted: 7/16/96

Toxicity Characteristic Leaching Procedure (TCLP)

EPA Mothod 1311

Metals

Units: mg/L (ppm) in TCLP Extract

			Sample Neme; Lub Code: Date Analyzed:	File 320 K9603970-006 7/17/96	Pila 464 K9603970-007 7/17/96	Amarillo Brick K9603970-010 7/17/96
Analyie	EPA Method	MRL	Regulatory Limit*			
Arsenio	3010A/5010A	0.1	5	0.2	ND	5,8
Barium	3010A/6010A	0.5	100	ND	ND	4.2
Cadmiran	3010A/6010A	U.01	1	1160	1320	1,46
Chromium	3010A/6010A	0.01	5	0.06	0.07	ND
Lond	3010A/6010A	0.05	5	33.8	119	0.42
Merculy	7470	100.0	0.2	0.001	ND	ND.
Scientum	3010A/6010A	0.1	ì	1.1	0.8	R3.2
Silver	3010A/5010A	0.01	5	ND	ND	ND

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Approved By:	Lant Date:	7/19/96

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Science Application International Corp.

Project:

Sample Matrix: Solid

ARH/01-0434-07-4612-062

Date Collected: 7/1,2/96 Data Received: 7/3/96

Date TCLP Performed: 7/15/96

Date Extracted: 7/16/96

Service Request: K9603970

Toxicity Characteristic Leaching Procedure (TCLP)

EPA Method 1311

Metals

Units; mg/L (pgm) in TCLP Extract

			Somple Name: Lab Code: Date Analyzed:	X-Cell Optic Flux K9603970-011 7/17/96	CR Kendali K9603970-012 7/17/96	Zortman Carbon K9603970-013 7/17/96
Analyte	EPA Method	MRL	Regulatory Limit*			
Americ	3010A/G010A	0.1	5	0.1	0.2	0.2
Baringa.	3010A/6010A	0,5	100	10.3	ND	0.7
Cadmium	3010A/6010A	0.01	1	0.39	0.07	ND
Chromium	3010A/6010A	0.01	5	ND	ND	ND
Lead	3010A/6010A	0.05	5	18.6	0.18	מא
Mercury	7470	0.001	0.2	ND	0.039	0.038
Selenium	3010A/6010A	0.1	1	0.3	ND	0.8
Silver	3010A/6010A	0.01	5	ND	ND	0.53

From 40 CFR Part 261, et al., and Federal Register, March 29, 1990 and June 29, 1990.

Approved By:	CAN+	Date:	7/19/96	-
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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:

Science Application International Corp.

Project:

AEH/01-0834-07-4612-062

Sample Matrix: Solid

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Service Request: R9603970
Date Collected: 7/1,2/96
Date Received: 7/3/96

Date TCLP Performed: 7/15/96

Date Extracted: 7/16/96

Tuxicity Characteristic Leaching Procedure (TCLP)

EPA Method 1311 Metals

Units: mg/L (ppm) in TCLP Bairact

			Sample Name; Lah Code; Date Analyzed;	Metala Research Carbon 1127 K9603970-014 7/17/96	Refrainty Brick K9603977-015 7/17/96	Heiena Brick (PM) K9603970-016 7/17/96
Analyte	EPA Method	MRL	Regulatory Limit*			
Arrenic	3010A/6010A	0.1	5	1.1	2,5	2.0
Barium	3010A/60JQA	0,5	100	0.\$	ИD	MD
Codedon	3010A/6010A	0.01	1	0.02	0.40	51. 5
Chronium	3010A/6010A	0.01	5	ND	· ND	ND
Lord	3010A/6010A	0.05	5	ND	2,85	39.4
Meccuy	7470	100,0	0.2	1.04	EQD.0	0.001
Sclenium	3010A/6010A	0.1	1	0.2	1.3	0.5
Silver	A0109/4010E	0.01	5	ND	ND	ND

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Approved By: Und Date: 1/9/96

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client

Science Application International Corp.

Project:

AEH/01-0834-07-4612-062

Sample Matrix: Solid

Service Request: K9603970

Date Collected: 7/1-2/96
Date Received: 7/3/96

Date Extracted: 7/15/96

Date Analyzed: 7/17/96

Duplicate Summary Total Metals Units: mg/Kg (ppm) Dry Weight Basis

Sample Name:

Pile 796

Lab Code:

K9603970-005

	EPA	,	Sample	Duplicate Sample		Relative Percent
Analyte	Method	MRL	Result	Remit	Average	Difference
Aluminum	6010A	10	2180	2150	2160	1
Attimony	6010A	10	36 5	<i>5</i> 71	568	1
Axeedic	6010A	50	2420	2320	2370	4
Bartom	6010A	1	109	124	116	13
Beryllium	6010A	1	ND	ND	ND	-
Boron	6010A	10	316	308	312	3
Cadurium	6010A	1	343D	3660	3540	6
Calcium	6010A	10	15400	15700	15600	6 2
Chromium	5010A	2	1060	971	1020	9
Cobelt	6010A	2	3470	3430	3450	1
Copper	6010A	2	116000	117000	116000	<1
Iron	6010A	4	48300	48600	48400	<1
Land	6010A	20	161000	176000	168000	y
Magnesium	A 010 A	2	2450	2590	2520	6
Manganero	6010A	1	379	365	372	· 4
Metcury	747 1	0.2	15.7	1 6 .0	15,8	2
Melybdenum	6010A	2	37	37	37	<1
Nickel	6010A	10	13100	13100	13100	<1
Potustium	4010A	400	440	590	515	29
Solonium	6010A	50	- 64	61	62	5
Silicon, as SiO ₂ (X)	6010A	20	5210	\$990	5600	14
Silver	6010A	2	90	92	91	2
Socion	6010A	20	29800	29700	29800	<1
Variation	601QA	2	31	31	31	<1
Zinc	6010A	2	43600	47200	45400	8

X

HCi solutile SiO2

Approved By: Date: 7/18/96

Date: 7/18/96

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Clent

Science Application International Corp.

Project

AEE/01-0834-07-4612-062

Sample Matrix: Solid

Service Request: K9603970

Date Collected: 7/1-2/96 Date Received: 7/3/96

Date Extracted: 7/15/96 Date Analyzed: 7/17/96

Drobicate Summary Total Metals Units: mg/Kg (ppm) Dry Weight Besis

Sample Name:

Zortman Carbon

Tab Code

EOCUSTA VIII

Lab Code:	K9603970-013	EPA Method	MRL.	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Ajnminnon		6010A	10	239	231	235	3
Antimony		A0103	10	ND	ND	ND	•
Aumic		6010A	50	מא	ND	ND	•
Karium.		6010A	1	45	44	44	2
		6010A	i	ХD	ND	ND	•
Buyllium Burm		6010A	10	מא	, ND	ND	-
Cidmium		6010A	1	7	12	10	53
Culcium.		6010A	10	18100	17100	17600	6
		6010A	2	12	13	12	8
Circuium Cubalt		6010A	2	4	4	4	<!--</b-->
•	•	GOIUA	2	219	246	232	12
Copper		6010A	4	3000	3310	3160	10
Inm		4010A	20	20	24	22	18
Lind		A010A	20	908	24 0	874	8
Magnetium			1		364		3
Мапфикас		6010A	-	354		359	۵ ۵
Morcury		7471	0.2	12.9	12.8	12,8	-1
Molybdanum		6010A	2	ND	ND	ND	•
Nickel		6010A	10	985 ND	967 ND	976 ND	2
Pertaminum		6010A 6 010A	* 400 \$0	1130	1280	1200	12
Silanium.	•		20		1280 550	572	8
Silicon, as SiO, (7	N)	6010A		595			•
Silver		AU109	2	275	251	263	y
Section.		6010A	20	1170	1140	1160	3
Vimedium.		6010A	2	6	6	6	<1
Zinc		601QA	2	195	231	213	17

X

HCI soluble SiOs.

Date: = 1996 Approved By: DUT: STATISTING

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QA/QC Report

Client:

Science Application International Corp.

Project:

AEE/01-0834-07-4612-062

Sample Matrix: Solid

Service Haguest: K9503970 Date Collected: 7/1-2/96 Date Received: 7/3/96 Date Extracted: 7/15/96 Date Analyzed: 7/17/96

Duplicate Summary Total Metals Units: mg/Kg (ppm) Dry Weight Basis

Sample Name:

HX-Soil-1

Lab Code:

K9603970-017

•			a	Duplicate		Relative
	EPA		Sample	Sample		Percent
Analyte	Method	MRL	Result	Result	Average	Difference
Aluminum	6010A	10	6870	6900	6880	◁
Antimony	6010A	10	253	276	264	9
Armic	60 10A	50	3720	4220	3970	13
Bertium	, 6010A	1	180	182	- 181	1
Beryllinn	6010A	1	ND	ND	ND	•
Boron	6010A	10	21	20	20	5
Cadeahim	6010A	1	4030	4360	420	8
Calcium	6010A	10	57200	58400	<i>5</i> 7 80 0	2
Chromium	6010A	2	· 16	16	16	<1
Cobalt	601UA	2	121	125	123	3
Copper	6010A	2	4760	5040	4900	6
Iron	60 10A	4	24300	24400	24400	<1
Lead	6010A	20	30500	31800	31200	4
Magnesium	60 10A	2	13900	14000	14000	<1
Мащиневе	6010A	1	1290	1310	1300	2
Mercury	7471	0.2	33,1	28.1	30.6	16
Molybdomm	6010A	2	8	9	8	12
Nicial	6010A	10	137	134	136	2
Potassium.	6010A	400	1750	1860	1800	6
Selentun	6010A	50	68	75	<i>7</i> 2	10
Silicon, us SiO2 (X)	6010A	20	1980	2700	2340	31
Silve:	G010A	2	136	148	142	9
Sodium	6010A	20	1180	1230	1200	4
Venathon	6010A	2	23	22	22	4
Zinc	6010A	2	19500	20800	20200	6

X

HCl soluble 810₂.

Apparved By:	4	Date: 7/13/16
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CONTENT OF THE CO.

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Climt

Science Application International Corp.

Project:

Saraple Matrix: Solid

AEUH/01-0834-07-4612-062

Date Collected: 7/1-2/96 Date Received: 7/3/96

Data Extracted: 7/15/96 Date Analyzed: 7/17/96

Service Request: K9603970

Matrix Spike Summary Total Metals Units: mg/Kg (ppm) Dry Weight Basis

Sample Name: Lab Code:	File 796 K9603970-005				Spiked		CAS Percent Recovery
			Spile	Sample	Sample	Percent	Acceptance
Analyte	·	MRL	Lovel	Result	Result	Recovery	Limits
Alumbum		10 .	400	2180	2430	NA	60-130
Anthrony		10	100	565	6 9 4	NA	30-120
Aremic		50	400	2420	2760	NA	60-130
Barinm		1	400	10 9	484	94	60-130
Beryllium		1	10	ND	10	100	60-130
Borom		10	'200	316	484	84	60-130
Cadminm		ī	10	3430	3770	NA	60-13 0
Circunium		2	40	1060	1070	NA	60- 130
Cobalt		2	100	3470	3750	NA	60-130
Copper		2	50	116000	123000	NA	60-130
Izon.		4	200	48300	50100	NA	60-130
Logi	•	20	100	161000	132000	NA	60-130
Maxigomeso		ī	100	379	487	108	60-130
Metoury		0.2	0.5	15.7	11.5	NA	60-130
Molybdonum	•	2	200	37	266	112	60-130
Nicial		10	100	13100	13600	NA	60-130
Selentum	•	50	200	64	255	96	60-130
Silicion, as SiO ₂ (KO.	20	4300	5210	10500	123	60-130
Silver	7	2	10	90	93	NA	60-130
Vanedium		2	100	31	121	90	60-130
Zin:		2	100	43600	48300	NA	60-130
EEU,		L	100	TJUUI	 300	747	An-13n

MA

Not Applicable, see case narrative.

X

HCI soluble 8iO2.

Approved By:		Date: 7 18 9	6
Militari (M	1	•	

QA/QC Report

Client:

Science Application International Corp.

Project:

ABH/01-0834-07-4612-062

Sample Matrix; Solid

Service Request: K9603970 Date Collected: 7/1-2/96

Date Received: 7/3/96

Date Extracted: 7/15/96
Date Analyzed: 7/17/96

Matrix Spike Summary Total Metals Units: mg/Kg (ppm) Dry Weight Basis

Sample Name: Zortman Carbon Lab Code: K9603970-013		Spike	Sample	Spiked Sample	Percent	CAS Percent Recovery Acceptance
Analyte	MRL	Levei	Remit	Result	Recovery	Limits
Alumbum	10	400	239	640	100	60-130
Antimony	10	100	ND	28	28(X1)	30-120
Ammio	50	400	מא	383	96	60-130
Bedum	1	400	45	438	98	60-130
Beryllium	1	10	ND	10	100	60-130
Barun	10	200	ND '	183	92	60-130
Cadmium	1	10	7	10	30(X2)	60-130
Christian	2	40	12	54.	10 <i>5</i>	60- 130
Cobult	2	100	4	102	98	<i>6</i> 0-130
Copper	2	50	219	236	NA	60-130
Iron	4	200	3000	2440	NA	60-130
Land	20	100	20	99	79	60-130
Manganese	1	100	354	440	86	60-130
Managy	0.2	0.5	12.9	13.0	NA	60-130
Mahadamm	· 2	200	ND	74	37(XX)	60-130
Nicks	10 .	100	985	1150	NA	60-130
Solenium	50	200	1130	699	NA	60-130
Silicon, as SiO ₂ (X3)	2	4300	275	5800	128	60-130
Silver	20	10	1170	960	NA	60-130
Vanudium	2	100	6	102	96	60-130
Zinc	2	100	195	180	NC(X2)	60-130

NA	Not Applicable; see case narrative.
XI.	Spike recovery out of control due to mon-homogeneous nature of the sample as received.
X2	Low spike recovery due matrix interfatonce.
Ж	HCI spinish MO2.

Approved By:	10	Date: _	7/18	96
Atonia.	1			

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Cliqut

Science Application International Corp.

Project:

Samule Matrix: Solid

AEEE/01-0834-07-4612-062

Service Request: K9603970

Date Collected: 7/1-2/96

Date Received: 7/3/96 Date Extracted: 7/15/96

Date Analyzed: 7/17/96

Matrix Spike Summary Total Metals Units: mg/Kg (ppm) Dry Weight Bools

Sample Name; Lab (2 de:	EX-Sal-1 K9603970-017				Spiked		CAS Percent Recovery
Analos		MRL	Spike Level	Sample Remlt	Sample Result	Percent Recovery	Acceptance Limits
Analyte							
Alumbanu		10	400	6870	6730	NA	60-130
Antimony		10	100	253	470	217(X1)	30-120
Arranio		5 0	400	3720	4100	NA	60-130
Barium		1	400	180	534	88	60-130
Bery lium		1	10	ND	10	100	60-130
Boron		10	200	21	211	95	60-130
Cadrainm		1	10	4030	4240	NA	60-130
Chromium		2	40	16	53	92	60-130
Cobelt		2 .	100	121	211	90	60-130
Copper		2	50	4760	3 88 D	NA	60-130
Iron		4	200	24300	19500	NA	60-130
Land		20	100	30500	30300	NA	60-130
Manganese		ī	100	1290	1450	NA	60-130
Morary		0.2	0.5	33,1	28.3	NΛ	60-130
Molybdonum		2	200	8	192	92	60-130
Nickel		10	100	137	231	94	60-130
Salastion		50	200	68	226	79	60-130
Silican, as SiO ₂ ((XX)	20	4300	1980	8860	160(X1)	60-130
Silver	•	2	10	136	143	NA	60-130
Vanidhm	•	2	100	23	111	88	60-130
Zinc		2	100	19500	19200	NA	60-130

NA

Not Applicable; see case accrative.

XI

Spike receivery out of control due to non-homogeneous rustore of the sample as received.

M

HC1 soluble SIO2

Date: 7/18/96 Approved By:

Meiskungs Correcticus Spinson Wishes

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:

Science Applications International Corp.

Project:

AEH/01-0834-07-4612-062

Sample Matrix: Water

4-40 report

Service Request: K9603970

Date Collected: 7/1-2/96 Date Received: 7/3/96 Date Extracted: 7/15/96

Date Analyzed: 7/17/96

Doplicate Summary Total Metals Units: µg/L (ppb)

Sample Name:

ER-2

Lab Code:

K9603970-001

140 CAUS.	23003770-001	EPA		Sample	Duplicate Sample		Relative Percent
Analyte		Method	MRL.	Result	Result	Average	Difference
Aleminum		6010A	50	MD	·· ND	ND	•
Antimony		6010A	-50	· ND	ND	ND	•
Armenic		60 10 A	100	ND	ND	ND	-
Barinn		6010A	5	ND	ND	ND	-
Beryllium		60 10A	5	ND	ND	ND	•
Horna.		6010A	50	ND	ND	ND	•
Cadmium		6010A	4	ND	ND	ND	•
Calcium		6010A	50	93	95	94	2
Chrymium		6010A	5	ND	ND	ND	•
Cobult		6010A	, 10	ND	ND	ND	•
Copyet		6010A	10	ND	ND	ХD	•
Irom		6010A	20	ND	ND	ХD	-
Lead		6010A	50	MD	מא	ND	•
Mayposium		6010A	10	17	16	16	6
Manganeso		6010A	5	ND	ND	ND	•
Managy	•	747 0	0.5	ND	ND	, ND	-
Molybdenum		6010A	10	ND	ND	ND	•
Nickel		6010A	20	ND	ND	. ND	-
Pota usinan		6010A	2000	ND	ND	ND	•
Solculum		6010A	100	מא	ND	מא	•
Silicon, au 810, (X)	60 10 A	200	253	278	266	9
Silv:s		6010A	10	ND	ND	ND	•
Sodiam		6010A	100	414	412	413	<1
Vanidinn		6010A	10	ND	ND	ND	•
Zinc		6010A	10	ND	ND	ND	-

X

BCI soluble SiO2.

بطاحت

TUJBUJIOIOT

QA/QC Report

Client

Science Applications International Corp.

Project:

Sangale Matrix: Water

ARH/01-0834-07-4612-062

Service Request: K9603970 Date Collected: 7/1-2/96 Date Received: 7/3/96 Date Extracted: 7/15/96

Date Analyzed: 7/17/96

Matrix Spike Summery Total Metals Units: µg/L (ppb)

Sample Name: Lah Code:	ER-2 K9603970-001		Spike	Sample	Spiked Sample	Parcest	CAS Percent Recovery Acceptance
Analyte		MINIL	Level	Result	Repult	Recovery	Limits
Almainum	•	50	2000	ND	2150	108	75-125
Attimony		50	500	ND	555	111	75-125
Armaic		100	2000	ND	2070	104	75-125
Barrin		5	2000	ND	2190	110	75-125
Heryflinn		5	50	ND	53	106	75-125
Bornan		50	1000	ND	1040	104	75-125
Cadmium		4	50	ND	58	116	75-125
Chromina		5	200	ND	219	£10	<i>75</i> -125
Cobalt		10	500	ND	501	100	75-125
Comper		10	250	ND	267	107	75-125
Iron.	•	20	1000	ND	1 07 0	107	75-125
Loui		50	500	ND	35 1	110	75-125
Manganese		5	500	ND	542	108	73-125
Mercuty	•	0.5	1	ND	1.0	100	60-140
Molybdomm		10	1000	ND	[120	112	75-125
Niclasi		20	500	ND	569	114	75-125
Selezion		100 .	1000	· ND	1040	104	75-125
Silikum, na SiO ₂ (X)	200	21000	253	23300	110	75-125
Silver	•	10	50	ND	46	92	75-125
Vanadium		10	500	ND	516	103	75-125
Zin:		10	500	ND	514	103	75-125

X

HCl soluble SiO2.

Date: 7/18/96 Approved By:

QA/QC Report

Client:

Science Application International Corp.

Service Request: K9603970

Project:

AHE/01-0834-07-4612-062

Data Collected: 7/1,2/96

Date Received: 7/3/96

Sample Matrix: Solid

Date TCLP Performed: 7/15/96

703903T373→

Date Extracted: 7/16/96

Date Analyzed: 7/17/96

Matrix Spike Summary

Toxicity Characteristic Leaching Procedure (TCLP)

EPA Method 1311

Metals

Units: mg/L (ppm) in TCLP Extract

Sample Name:

PIL 796

THE COOK	P2007A \n-rri2	Spiked						
		Spike	Sumple	Sample	Percent			
Analyte		Level	Result	Result	Recovery			
Americ		5	ND	5.3	106			
Berium		5	ND	4.8	96			
Cadinian.		1	48.8	49.1	NA.			
Chronina		5	ND	4.35	87			
Lend		5	69.5	65	NA			
Monney		0.01	0. 065	0.075	NA			
Selenburn		1	מא	1.2	120			
Silver		ī	ND	0.9	90			

Powent recovery information is provided in order to assess the performance of the method on this matrix.

NA

Not Applicable; see case natrative.

Approved By:	LAN	Date:	lalab
TO CONTROL OF THE POST OF THE			, ,

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:

Science Application International Corp.

Service Request: K9603970

Project:

ABR/01-0834-07-4612-062

Date Callected: 7/1,2/96

Sample Matrix: Solid

Date Beceived: 7/3/96

Date TCLP Performed: 7/15/96

Date Extracted: 7/16/96 Date Analyzed: 7/17/96

Matrix Spike Summary

Toxicity Characteristic Leaching Procedure (TCLP)

HPA Method 1311

Metals

Units: mg/L (ppm) in TCLP Extract

Sample: Namo: Lab Code:

Zortman Carbon

EOKUSOTU VIS

	CTO-OI CUMPER			Spiked	
		Spilice	Sample	Sample	Percent
Analyte		Level	Recuit	Result	Accovery*
Amerik:		5	0,2	5.3	102
Bartom.		5.	0.7	5.6	· 98
Cadmium		1	מא	0.99	99
Chromium		5	מא	4.50	90
Lead	•	5	ND	4.82	96
Mercury		0.01	0,038	0.049	110
Selenium		1	0.8	1.9	110
Silver		Ī	0.53	1,52	99

Percent recovery information is provided in order to assess the performance of the method on this metric.

7/19/96 Unit___Date:___ Approved By:

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QA/QC Report

Client Project: Science Application International Corp.

AEH/01-0834-07-4612-062

Sample Matrix: Solid

Service Request: K9603970

Date Collected: 7/1,2/96

Date Received: 7/3/96 Date TCLP Performed: 7/15/96

Date Extracted: 7/16/96

Date Analyzad: 7/17/96

Matrix Spike Stremary

Toxicity Characteristic Leaching Procedure (TCLP)

EPA Method 1911

Metale

Units: me/L (ppm) in TCLP Extract

Sample Name: Leb Code

EX Soll-1 ¥9603970_017

1280 12000.	5-3003310-011	Spiked						
		Spike	Sample	Sample	Percent			
Amalyte		Level	Rasult	Remit	Recovery*			
Arestic		5	0.5	5.5	100			
Bartim		5	ND	4.8	96			
Cadrainm.		1	40.4	41.0	NA			
Chiemium		5	ND	4.34	107			
Load.		5	67.3	71.3	NA			
Meanry	•	0.01	0,001	0.011	100			
Selentum		1	ND	1.1	110			
Silver		i	ND	0.90	90			

Percent recovery information is provided in order to assess the performance of the method on this matrix.

Appenved By:	cnt	Date:	7/4/26	
(MENTER-PRO) - (MO-1) 77/9/4		•		,

Page Mai

1317 S. 13th Avenue

P.O. Box 479.

Kolso, WA 98626



Ed Moniesty	Lyndo Huckaster
Phone: Pexpilone:	Phone: (360) 577-7222 Plux phone: (360) 636-1068
<u>cc:</u>	

☐ Poc your coview ☐ Reply ASAP ☐ United Please comment REMARKS: Total Silicon results. Please note that the total metals I presidy elhand be reported on an as received bein (not dry weight your final hardcopy will be corrected. Please give me a call if you have any questions. Thank you!

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:

Science Application International Corp.

Project:

AER/01-0834-07-4612-062

Sample Matrix: Solid

Series Bernet

Service Request: K9603970

Date Collected: 7/1-2/96
Date Received: 7/3/96

Date Extracted: 7/17/96

Date Analysed: 7/19/96

Total Silicon, as SiO₂ Method: FBA/ICP-OES Units: mg/Kg (ppm) As Received Hasis

Scople Name	Lab Code	MORL	Result	
Bin 13	X9603970-003	2000	57300	
Piin 697	K9603970-004	2000	20900	
Pila 796	X9603970-005	2000	28000	
Pile 520	K9603970-006	2000	15200	
Pile 464	X9603970-007	2000	10200	
Aynatillo Brick	X9603970-0 10	2000	20900	· - fails Pb
K-Cell Optic Flux	K9603970-011	2000	369000 - 34.1	1 - (1.5 1)
CR Kendell	K9603970-012	2000	NID	•
Zintman Carbon	K9603970-013	2000	53500	
Motals Resourch Carbon 1127	K9603970-014	2000	212000	
Reflectory Brick	E9603970-015	2000	91700	
Halena Brick (PM)	K9603970-016	2000	158000	
FX-Soil-1	K9603970-017	2000	404000 -	
EX Sail-2	K9601970-018	2000	371000 —	
Fast Helena Brick-2	K9603970-019	2000 .	227000 70°/0	- fails
Ciolden Photon	K9603970-020	2000	704000 / / / 0	cadmiun
Ill Praco Brick	K9603970-021	2000	407000	Z Story/ tro
Metals Research Carbon 1132	K9603970-022	2000	168000	٠,
Method Blank	K9603970-MB	2000	מא	